

HONEYWELL GAMEWELL-FCI GWF-7075 (75 detectors and 75 modules) CONTROL COMMUNICATOR SYSTEM USING SYSTEM SENSOR PROTOCOL ENGINEER/ARCHITECT SPECIFICATION

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SECTION ONE: GENERAL

1.1 Scope

This specification document provides the requirements for the installation, programming and configuration of a complete Honeywell | Gamewell-FCI GWF-7075 digital protocol analog addressable fire alarm system. This system shall include, but not be limited to, system cabinet, power supply, built in Signaling Line Circuit (SLC), 80 character LCD annunciator, two programmable notification circuits, built in dual line, IP and optional cellular digital communicator associated peripheral devices, batteries, wiring, conduit and other relevant components and accessories required to furnish a complete and operational life safety system.

1.2 Work Included

1.2.1 General Requirements

The contractor shall furnish and install a complete 24 VDC, electrically supervised, addressable fire alarm system as specified herein and indicated on the drawings. The system shall include but not be limited to all control panels, power supplies, initiating devices, audible and visual notification appliances, alarm devices, and all accessories required to provide a complete operating fire alarm system.

1.2.2 Labeling

All fire alarm system equipment shall be listed for it’s intended purpose and be compatibility listed to assure the integrity of the complete system.

1.3 Standards

The fire alarm equipment and installation shall comply with the current provisions of the following standards and shall be listed for it’s intended purpose and be compatibility listed to insure integrity of the complete system.

1.3.1 National Electric Code, NFPA 70Article 760

1.3.2 National Fire Protection Association Standards:

NFPA 13	Installation of Sprinkler Systems
NFPA 15	Water Spray Fixed Systems
NFPA 16	Deluge Foam Water Systems
NFPA 72	National Fire Alarm Code
NFPA 101	Life Safety Code
NFPA 720	Standard for the Installation of CO Detection

1.3.3 Local and State Building Codes
BOCA, National Building Code, Mechanical Code, Fire Prevention Code

1.3.4 Local Authorities Having Jurisdiction

1.3.5 Underwriters Laboratories Inc.

All equipment shall be approved by Underwriters Laboratories, Inc. for its intended purpose, listed as power limited by Underwriters Laboratories, Inc., for the following standards as applicable:

UL 864 UOJZ Control units for Fire Protective Signaling Systems
Local Signaling Unit
Central Station Signaling Protected Premises Unit
Remote Signaling Protected Premises Unit.
UL 2075 CO Detectors Connected to FACP
UL 864 SYZV Releasing Device Control Unit (Water Release Only)
UL 268 Smoke Detectors for Fire Protective Signaling systems.
UL 268A Smoke Detectors for duct applications
UL 217 Smoke Detectors for Single Stations
UL 521 Heat Detectors for Fire Protective signaling systems.
UL 228 Door Holders for Fire Protective signaling systems.
UL 464 Audible signaling appliances
UL 1638 Visual signaling appliances
UL 38 Manually Activated Signaling Boxes
UL 346 Waterflow indicators for Fire Protective signaling systems.
UL 1481 Power Supplies for Fire Protective Signaling systems.

1.3.6 Americans with Disabilities Act (ADA).

All visual Notification appliances and manual pull stations shall comply with the requirements of the Americans with Disabilities Act.

1.4 General Requirements

1.4.1 Manufacturers/Distributors Services:

1.4.1.1 The following supervision shall be provided by a factory trained service technician from the distributor of the fire alarm equipment. The technician shall be trained and shall have a minimum of two (2) years of service experience in the fire alarm industry. The technicians name shall appear on equipment submittals and a copy of his manufactures trained shall be sent to the project engineer. The technician shall be responsible for the following items:

a. A pre installation visit to the job site to review equipment submittals and to verify the method by which the system is to be wired.

b. During the installation the certified technician shall be on site or make periodic visits to verify installation and wiring of the system. He shall also supervise the completion of conduit rough, wires pulled into conduit and wiring rough, and ready for trim.

c. Upon completion of wiring, final checkout and certification of the system shall be made under the supervision of this technician.

d. At the time of the formal checkout, technician shall give operational instructions to the owner and or his representative on the system

1.4.2 Submittals

The contractor shall submit three (3) complete sets of documentation within thirty (30) calendar days after award of the purchase order. Indicated in the document will be the type, size, rating, style, catalog number, manufacturers names, photos, and /or catalog data sheets for all items proposed to meet these specifications. The proposed equipment shall be subject to the approval of the Architect/Engineer and no equipment shall be ordered or installed on the premises without that approval.

NOTE: DOCUMENTATION - Submittal of shop drawings shall contain at least three (3) copies of the manufacturer specification and installation instruction sheets. All equipment and devices on the shop drawings to be furnished under this contract shall be clearly marked in the specification sheets.

Suppliers qualifications shall be submitted indicating years in business, service policies, warranty definitions, NICET certification, completion of factory training program and a list of similar installations.

Contractor qualifications shall be supplied indicating years in business and prior experience with installations that include the type of equipment that is to be supplied.

The contractor shall provide hourly Service Rates, performed by a factory certified technician for this installed Life Safety System with the submittal. Proof of training and authorization shall be included with the submittal. These hourly service rates shall be guaranteed for a 1-year period.

1.4.3 Contract close-out Submittals

Deliver two (2) copies of the following to the owner's representative within Thirty (30) days of system acceptance. The closeout submittals shall include:

1- Installation and Programming manuals for the installed Life Safety System.
2- Point to point diagrams of the entire Life Safety System as installed. This shall include all connected Smoke Detectors and addressable field modules.
3- All drawings must reflect device address as verified in the presence of the engineer and/or end user.

1.4.4 Warranty

Warranty all materials, installation and workmanship for a three (3) year period, unless otherwise specified. A copy of the manufacturer warranty shall be provided with the close out documentation.

1.4.5 Products

This Life Safety System Specification must be conformed to in its entirety to ensure that the installed and programmed Life Safety System will accommodate all of the requirements and operations required by the building owner. Any specified item or operational feature not specifically addressed prior to the bid date will be required to be met without exception.

Submission of product purported to be equal to those specified herein will be considered as possible substitutes only when all of the following requirements have been met:

1- Any deviation from the equipment, operations, methods, design or other criteria specified herein must be submitted in detail to the specifying Architect or Engineer a minimum of ten (10) working days prior to the scheduled submission of bids. Each deviation from the operation detailed in these specifications must be documented in detail, including page number and section number, which lists the system function for which the substitution is being proposed.

2- A complete list of such substituted products with three (3) copies of working drawings thereof shall be submitted to the approved Architect and/or Consulting Engineer not less than ten (10) working days prior to the scheduled submission of bids.

3- The contractor or substitute bidder shall functionally demonstrate that the proposed substitute products are in fact equal in quality and performance to those specified herein.

1.4.6 General Equipment and Materials Requirements

All equipment furnished for this project shall be new and unused. All components shall be designed for uninterrupted duty. All equipment, materials, accessories, devices and other facilities covered by this specification or noted on the contract drawings and installation specification shall be best suited for the intended use and shall be provided by a single manufacturer. If any of the equipment provided under this specification is provided by different manufacturers, then that equipment shall be “Listed” as to its compatibility by Underwriters Laboratories (UL), if such compatibility is required by UL standards.

1.4.7 Satisfying the Entire Intent of these Specifications

It is the contractor’s responsibility to meet the entire intent of these specifications.

Deviations from the specified items shall be at the risk of the contractor until the date of final acceptance by the architect, engineer, and owner’s representative.

All costs for removal, relocation, or replacement of a substituted item shall be at the risk of the electrical contractor.

SECTION TWO: SPECIFICATIONS

2.1 General

2.1.1 Control Panel

The fire alarm control panel (FACP) shall be the Honeywell | Gamewell-FCI GWF-7075 analog addressable fire alarm control panel. The FACP must have a 2.5 amp power supply and be capable of expansion to a minimum of 50.5 total amps via bus connected expander modules that supervise low battery, loss off AC and loss of communication.

The FACP must have Day/Night sensitivity capabilities on detectors and be capable of supporting up to 150 analog addressable points (75 detectors + 75 modules). The communication protocol on the SLC loop must be digital.

The FACP must support a minimum of two programmable notification circuits. The panel must have a built in 80 character LCD annunciator with the capability of having an additional supervised remote annunciators connected in the field.

The FACP must have a built in UL approved IP and digital communicator with the option of adding a cellular module for communications. The communicator must allow local and remote up/downloading of system operating options, event history, and detector sensitivity data.

The FACP must automatically test the smoke detectors in compliance with NFPA standards to ensure that they are within listed sensitivity parameters and be listed with Underwriters Laboratories for this purpose.

The FACP must compensate for the accumulation of contaminants that affect detector sensitivity. The FACP must have day/night sensitivity adjustments, maintenance alert feature (differentiated from trouble condition), detector sensitivity selection, auto-programming mode (Jumpstart) and the ability to upgrade the core operating software on site or over the telephone.

The FACP shall have a Jumpstart feature that can automatically enroll all properly connected accessories into a functional system. Panels that do not have these capabilities will not be accepted.

The main communication bus (S-BUS RS485) shall be capable of class A or class B configuration with a total Bus length of 6,000 feet.

2.1.2 System Wiring

The Signaling Line Circuit (SLC) and Data Communication Bus (S-BUS) shall be wired with standard NEC 760 compliant wiring, no twisted, shielded or mid capacitance wiring is required for standard installations. All FACP screw terminals shall be capable of accepting 12-18 AWG wire. All system wiring shall be in accordance with the requirements of NFPA 70, the National Electrical Code (NEC) and also comply with article 760 of the NEC.

2.1.3 Signaling Line Circuits

The SLC shall be capable of a wiring distance of 5,000 feet from the SLC driver module and be capable of supporting 75 detectors and 75 modules. The communication protocol to SLC devices must be digital. Any SLC loop device, which goes into alarm, must interrupt the polling cycle for priority response from the FACP. The FACP must respond consistently to a device that goes into alarm on an SLC in under 3 seconds. The SLC shall be capable of functioning in a class A or class B configuration.

2.1.4 SLC loop devices

Devices supported must include photoelectric, heat detectors, combination fire and CO detectors, contact monitoring modules and relay output modules. There is to be no limit to the number of any particular device type up to the maximum of 75 detectors and 75 modules that can be connected to the SLC.

2.1.5 Addressable detector functions

The products of combustion detectors must communicate analog values using a digital protocol to the control panel for the following functions:

Automatic compliance with NFPA 72 standards for detector sensitivity testing

Drift compensation to assure detector is operating correctly

Maintenance alert when a detector nears the trouble condition

Trouble alert when a detector is out of tolerance

Alert control panel of analog values that indicate fire.

2.1.6 Programmable Notification Circuits

The FACP shall support two programmable notification circuits that are capable of being programmed as supervised reverse polarity notification circuits or supervised auxiliary power circuits that can be programmed as continuous, resettable, door holder power or sounder base synchronization. These circuits can be configured as 2 Class B outputs or 1 Class A output.

2.1.7 Built-in Annunciators

The main control must have a built in annunciator with an 80 character LCD display and feature LED's for General alarm, Supervisory, System trouble, System silence, and Power. When in the normal condition the LCD shall display time and date based on a 200-year clock which is capable of automatic daylight savings time adjustments. The annunciator must be able to Silence, Acknowledge, and Reset alarms through the use of the built-in keypad. The annunciators must be able to program up to 20 levels of user codes that will allow the limitation of operating system programming to authorized individuals.

2.1.8 Remote Annunciators

The fire system shall be capable of supporting up to eight remote LCD. Remote annunciators shall be capable of operating at a distance of 6,000 feet from the main control panel on unshielded non-twisted cable.

2.1.9 I/O LED Driver Module

The fire system shall be able to support up to eight I/O modules on the SBUS that shall be used to drive remote LED graphic style displays and accommodate up to eight dry contact type switch inputs. The I/O modules shall each drive up to 40 LEDs without requiring external power connections. The I/O module inputs shall be supervised and shall be suitable for alarm and trouble circuits as well as reset and silence switches.

2.1.10 Serial/Parallel interface

The fire system shall be capable of supporting up to two serial / parallel interfaces that are capable of driving standard computer style printers. The interface shall be programmable as to what information is sent to it and shall include the ability to print out Detector Status, Event History and System Programming.

2.1.11 Distributed Power Module

The contractor shall supply power module compatible with the GWF-7075 fire alarm control panel (GFPS-6S). The GFPS-6S power module must have 6 amps of output power and four circuits rated at 3 amps each. The four circuits can be programmed as notification outputs or auxiliary power outputs of door holder, constant, resettable and sounder base synchronization types.

2.1.12 Digital Communicator

The digital/IP communicator must be an integral part of the control panel and be capable of reporting all zones or points of alarm, supervisory, and trouble as well as all system status information such as loss of AC, low battery, ground fault, loss of supervision to any remote devices with individual and distinct messages to a central station or remote station. The communicator must also be capable of up/downloading of all system programming options, event history and detector sensitivity compliance information to a PC on site or at a remote location.

The communicator shall transmit the information by one or more of the following means of communication – internet, cellular or standard telephone lines. The communicator must be capable of reporting via SIA and Contact ID formats. The communicator shall have a delayed AC loss report function which will provide a programmable report delay plus a 10-

25 min random component to help ease traffic to the central station during a power outage. No controls that use external modems for remote programming and diagnostics shall be accepted.

2.1.13 Dry Contacts

The FACP shall have three form “C” dry contacts, one will be dedicated to trouble conditions, the other two will be programmable for alarm, trouble, supervisory, notification, pre-alarm, waterflow, manual pull, aux. 1 or aux. 2 conditions. The trouble contact shall be normal in an electrically energized state (fail-safe) so that any total power loss (AC and Backup) will cause a trouble condition. In the event that the microprocessor on the FACP fails the trouble contacts shall also indicate a trouble condition.

2.1.14 Ground Fault Detection

A ground fault detection circuit shall be employed which can detect a ground fault on both the positive and negative side of each circuit. The ground fault detector shall operate the general trouble devices as specified but shall not cause an alarm to be sounded. Ground faults shall not interfere with normal operation, such as alarm, or other trouble conditions.

2.1.15 Over-current Protection

All low voltage circuits will be protected by microprocessor controlled power limiting or have self-restoring polyswitches for the following: smoke detector power, main power supply, indicating appliance circuits, battery standby power and auxiliary output.

2.1.16 Test Functions

A “Lamp Test” mode shall be a standard feature of the fire alarm control panel and shall test all LED’s and the LCD display on the main panel and remote annunciators.

A “Walk Test” mode shall be a standard feature of the fire alarm control panel. The walk test feature shall function so that each alarm input tested will operate the associated notification appliance for six seconds. The FACP will then automatically perform a reset and confirm normal device operation. The event memory shall contain the information on the point tested. the zone tripped, the zone restore and the individual points return too normal.

A “Fire Drill” mode shall allow the manual testing of the fire alarm system notification circuits. The “Fire Drill” shall be capable of being controlled at the main annunciator, remote annunciators and via a remote contact input.

A “Disable Mode” shall allow for any zone, point, group, or NAC circuit to be Disabled without affecting the operation of the total fire system.

2.1.17 Remote Input Capabilities

The control panel shall have provisions for supervised switch inputs for the purpose of Alarm reset and Alarm and Trouble silence.

2.1.18 Notification Appliance Mapping Structure

All notification circuits and modules shall be programmable via a mapping structure that allows for a maximum of 125 output groups. Each of these groups shall have the ability to be triggered by any of the panels 125 zones. A group may be triggered from a zone individually, or may contain a global trigger for manual pull stations, fire drills and two different system alarms. Additionally each zone will individually control the cadence pattern of each of the groups that it is "Mapped" to so that sounders can indicate a variety of conditions. The zone shall be capable of issuing a different cadence pattern for each of the groups under its control. The mapping structure must also allow a group to be designated to "ignore cadence" for use with strobes and other continuous input devices. Zones shall have eight different output categories; Detector alarm, Trouble, Supervisory, Pre-alarm, Waterflow, Manual pull, Zone auxiliary one and Zone Auxiliary two. Each of the categories shall have the ability to control from 1 to 8 output groups with a cadence pattern. The patterns are; March code, ANSI 3.41, Single Stroke Bell Temporal, California code, Zone 1 coded, Zone 2 coded, Zone 3 coded, Zone 4 coded, Zone 5 coded, Zone 6 coded, Zone 7 coded, Zone 8 coded, Custom output pattern 1, Custom output pattern 2, Custom output pattern 3, Custom output pattern 4 and Constant. In addition, synchronization is built-in for Amseco, Gentex, System Sensor, and Wheelock devices. This mapping/cadence pattern shall be supported by all system power supplies and Notification Expander Modules.

2.1.19 On board programmer

The FACP shall have an on board programmer which will allow for all system functions and options to be programmed. Any panel that does not have this capability will not be accepted.

2.1.20 Downloading Software

The fire alarm control panel must support up/downloading of system programming from a PC under a Windows Operating System. The FACP must also be able to upload the detector sensitivity test results and a 1000 event system event buffer to the PC. Communication shall take place over a direct connection to the PC and/or via the same telephone lines as the built in digital communicator and shall not require an external modem to be connected to the panel. The downloading software shall contain a code that will block unauthorized persons from accessing the panel via direct connection or over the phone lines.

2.1.21 English language descriptions

The FACP shall provide the ability to have a text description of each system device input zone and output group on the system. The use of individual lights to provide descriptions will not be acceptable.

2.2 SYSTEM OPERATION

2.2.1 Alarm

When a device indicates an alarm or supervisory condition the control panel must respond within 3 seconds. The General Alarm or Supervisory Alarm LED on the annunciator(s) shall light and the LCD shall prompt the user as to the number of current events. All notification circuits associated with the alarm or supervisory condition shall activate. If the digital dialer is being utilized it shall transmit a signal to the digital alarm receiving unit. The alarm shall also cause the appropriate door holders and air handlers to shut down. If employed all elevators shall return to the main level or an alternate level when required by the elevator specification or building code. The alarm information must be stored in event memory for later review. Event memory shall be available at the main and all remote annunciators. The alarm memory must be capable of storing up to 1000 events.

When the alarmed device is restored to normal, the control panel shall be required to be manually reset to clear the alarm condition, except that the alarms may be silenced as programmed.

Exception: When detectors are utilized in single station or multi-station applications they may be self- restoring.

An alarm shall be silenced by pressing Silence at the main panel or a code or Firefighter key at the remote annunciators. When silenced, this shall not prevent the resounding of subsequent events if another event should occur (subsequent alarm feature). When alarms are silenced the silenced LED on the control panel, and on any remote annunciators shall remain lit, until the alarmed device is returned to normal.

2.2.2 Troubles

When a device indicates a trouble condition, the control panel System Trouble LED should light and the LCD should prompt the user as to the number of current events. The trouble information must be stored in event memory for later review. Event memory must be available at the main and all remote annunciators.

When the device in trouble is restored to normal, the control panel shall be automatically reset, the trouble restore information must be stored in event memory for later review. Event memory must be available at the main and all remote annunciators. A trouble shall be silenced by pressing Silence at the main panel or a code or Firefighter key at the remote annunciators. When silenced, this shall not prevent the resounding of subsequent events if another event should occur.

2.2.3 Supervision methods

The SLC loop shall be electrically supervised for opens and ground faults in the circuit wiring, and shall be so arranged that a fault condition on any loop will not cause an alarm to sound. Additionally, every addressable device connected to the SLC will be supervised and individually identified if in a fault condition. The occurrence of any fault will light a trouble LED and sound the system trouble sounder, but will not interfere with the proper operation of any circuit which does not have a fault condition.

SECTION THREE: SYSTEM COMPONENTS

3.1 System Cabinet

3.1.1 Mounting

The system cabinet shall be red and configured for surface mounting.

3.1.2 Audible System Trouble Sounder

An audible system trouble sounder shall be an integral part of the control unit. Provisions shall also be provided for an optional supervised remote trouble signal.

3.2 Power Supply and Charger:

The entire system shall operate on 24 VDC, filtered switch mode power supply with the rated current available of 2.5 Amps. The FACP must have a battery charging circuit capable of complying with the following requirements:

Sixty (60) hours of battery standby with five (5) minutes of alarm signaling at the end of this sixty (60) hour period (as required per NFPA 72 remote station signaling requirements) using rechargeable batteries with automatic charger to maintain standby gel-cell batteries in a fully charged condition.

OR

Twenty-four (24) hours of battery standby with five (5) minutes of alarm signaling at the end of this twenty-four (24) hour period (as required per NFPA 72 central station signaling requirements) using rechargeable batteries with automatic charger to maintain gel-cell batteries in a fully charged condition.

The power supply shall comply with UL Standard 864 for power limiting.

The FACP will indicate a trouble condition if there is a loss of AC power or if the batteries are missing or of insufficient capacity to support proper system operation in the event of AC failure. A “Battery Test” will be performed automatically every minute to check the

integrity of the batteries. The test must disconnect the batteries from the charging circuit and place a load on the battery to verify the battery condition.

In the event that it is necessary to provide additional power one or more of the model GFPS-6S Distributed Power Modules shall be used to accomplish this purpose.

3.2.1 Connections and Circuits

Connections to the light and power service shall be on a dedicated branch circuit in accordance with the National Electrical Code (NEC) and the local authority having jurisdiction (AHJ).
The circuit and connections shall be mechanically protected.
A circuit disconnecting means shall be accessible only to authorized personnel and shall be clearly marked “FIRE ALARM CIRCUIT CONTROL”.

SECTION FOUR: ACCESSORY COMPONENTS

4.1 The FACP shall support the following devices on the RS-485 data bus:

5824	Printer Interface Module
RA-1000	LCD Remote Annunciator
5880	LED I/O module
GFPS-6S	Intelligent Distributed Power Module

4.2 The FACP shall support the operation of 75 detectors and 75 addressable modules total devices without regard to device type.

The following devices shall be supported:

ASD-PL2F	Addressable Photoelectric Smoke detector
ASD-PTL2F	Addressable Photoelectric Smoke detector with Thermal
ASD-PL2FR	Addressable Photoelectric Smoke detector with Relay
MCS-COF	Addressable Combination Photoelectric and CO Detector
ATD-L2F	Addressable Heat Sensor
ATD-RL2F	Addressable Heat with Rate of Rise
ATD-HL2F	Addressable Heat High temp 190°
MCS-ACCLIMATE2F	Addressable Multi Criteria Smoke detector with thermal
B210LP	6” detector base
DNR	Addressable Duct Detector Housing
AOM-2RF	Addressable Relay Module
MMO-6RF	Addressable Multi Relay Module
AMM-2RIF	Addressable Relay/Input Module
AMM-4F	Addressable Input Module (Class A or B)
AMM-2F	Mini Input Module
AMM-2IF	Addressable Dual Input Module

MMI-10F	Addressable Multi Input Module (10)
AOM-2SF	Addressable Notification Module
MM0-6SF	Addressable Notification Multi Module (6)
AMM-2SF	Two Wire Smoke Detector Module
MMI-6SF	6 Multi Smoke Detector Module
M500X	Isolation Module
ABD-2F	Addressable Beam Detector
ABD-RT2F	Addressable Beam Detector with Test feature
B224BI	Addressable Isolator base
B224RB	Detector Relay Base
B200S	Intelligent Detector Sounder Base
B200S-LF	Intelligent Detector Low Frequency Sounder Base
RTS151KEY	Remote Test Switch for Photoelectric Duct Detector
RTS151	Remote Test Switch for Photoelectric Duct Detector
MS-7ASF	Addressable Single Action Pull Station
MS-7AF	Addressable Dual Action Pull Station
ISO-6	6 Multi Isolation Module

The FACP shall support these other Honeywell devices via addressable input, addressable notification, or addressable output modules.

MS-7LOB	Dual Action Manual Pull Outdoor Listed
MS-7LR	Dual Action Manual Pull Hex Key reset
MS-7S	Dual Action Agent Releasing Station Station – Key Reset
MS-7LRA	Dual Action Agent Releasing w/ Abort Station Station – Key Reset
MS-7SP	Dual action Manual Pull Station “Spanish”- Key reset
SB-I/O	Surface mount back box for outdoor use.

4.3 Furnish and install, where shown on the drawings, the following devices:

4.3.1 Manual Fire Alarm Stations

Manual fire alarm stations shall be non-coded, break glass, single or double action type, with a key operated test-reset lock in order that they may be tested, and so designed that after actual emergency operation, they cannot be restored to normal except by use of a key. The reset key shall be so designed that it will reset manual station and open FACP without use of another key. An operated station shall automatically condition itself so as to be visually detected, as operated, at a minimum distance of fifty feet, front or side. Manual stations shall be constructed of die cast metal or polycarbonate with clearly visible operating instructions on the front of the stations in raised letters. Stations shall be suitable for surface mounting on matching backbox, or semi-flush mounting on a standard single-gang box, and shall be installed within the limits defined by the Americans with Disabilities Act (ADA) dependent on manual station accessibility or per local requirements. Manual stations shall be addressable models MS-7AF / MS-7ASF or installed in conjunction with an addressable input module, AMM-2F / AMM-2F. Manual stations shall be Honeywell Underwriters Laboratories listed.

4.3.2 Remote Power Supplies

The remote power supplies for notification appliances shall be the GFPS-6S. The GFPS-6S intelligent power supply shall wire on the main SBUS and be programmed through the GWF-7075. It will support 6 amps of 24 volt DC power with 4 notification circuits, rated at 3 amps each.

The remote power supply model GFPS-9 or GFPS-6 may also be used on the system. These power supplies are activated by notification circuit or the AOM-2SF module and support 24VDC power, with 4 notification circuits, rated at 3 amps each. The total power on a GFPS-6 is 6 amps. The total power on a GFPS-9 is 9 amps. These power boosters may also be activated from another notification circuit from either the fire alarm control, a distributed power supply (GFPS-6S).

4.3.3 Notification Devices

The visual and audio/visual signaling devices shall be compatible with the GWF-7075, RFP-2100, GFPS-6, GFPS-6S, or GFPS-9, as stated in the installation manuals and be Listed with Underwriters Laboratories Inc. per UL 1971 and/or 1638. Each indicating appliance circuit shall be electrically supervised for opens, grounds and short circuit faults, on the circuit wiring, and shall be so arranged that a fault condition on any indicating appliance circuit or group of circuits will not cause an alarm to sound. The occurrence of any fault will light the trouble LED and sound the system trouble sounder, but will not interfere with the proper operation of any circuit which does not have a fault condition. The notification appliance (combination audio/visual units only) shall produce a peak sound output of 90dba or greater as measured in an anechoic chamber. The appliance shall be capable of meeting the candela requirements of the blueprints presented by the Engineer and ADA. The appliance shall be polarized to allow for electrical supervision of the system wiring. The unit shall be provided with terminals with barriers for input/output wiring and be able to mount a single gang or double gang box or double workbox with the use of an adapter plate. The unit shall have an input voltage range of 19-30 volts.

4.3.4 Smoke Detectors

Smoke detectors shall be Honeywell | Gamewell-FCI Model ASD-PL2F analog/addressable photoelectric smoke detectors. The combination detector head and twist lock base shall be U.L. listed compatible with the Honeywell GWF-7075 fire alarm control panel. The base shall permit direct interchange with Honeywell's MCS-ACCLIMATE2F / ATD-L2F detectors. The base shall be the appropriate twist lock base B210LP. The smoke detector shall have a flashing status LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady at full brilliance. The detector may be reset by actuating the control panel's reset switch. The sensitivity of the detector shall be capable of being selected and measured by the control panel without the need for external test equipment. The vandal security-locking feature shall be used in those areas as indicated on the drawing. The locking feature shall be field selectable when required. It shall be possible to perform a sensitivity test of the detector without the need of generating smoke. The test method shall simulate the effects of products of combustion in the chamber to ensure testing of the detector circuits. Detectors shall have completely closed back to restrict entry of dust and air turbulence and have a 30 mesh insect screen. Electronics of the unit shall be shielded to protect against false alarms from E.M.I. and R.F.I.

4.3.5 Heat Detectors

Furnish and install analog/addressable heat detectors, Honeywell model ATD-L2F. The combination heat detector and twist lock base shall be U.L. listed compatible with the Honeywell GWF-7075 fire alarm control panel. The base shall permit direct interchange with the Honeywell | Gamewell-FCI ASD-PL2F / MCS-ACCLIMATE2F. The base shall be appropriate twist lock base B210LP. The heat detector shall have a flashing status LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady at full brilliance. The detector may be reset by actuating the control panel's reset switch. The vandal security-locking feature shall be used in those areas as indicated on the drawings. Electronics of the unit shall be shielded to protect against false alarms from E.M.I. and R.F.I.

4.3.6 Duct Detectors

Duct Detector shall be Honeywell | Gamewell-FCI Model DNR Duct Detector Housing. A separate ASD-PL2F / ASD-PL2FR The duct detector housing shall be capable of housing the AOM-2RF module for optional output devices.

4.4 Wireless Device Fire Alarm Panel Connectivity

Wireless devices used as components of a fire alarm system shall be capable of connection to the GWF-7075 via a Signaling Line Circuit (SLC) via a gateway. The gateway shall provide the link to one mesh network of wireless devices. Multiple gateways can be supported on the same GWF-7075, limited to (4) wireless mesh networks in the same radio space. All sensing functions supported for wired devices shall be supported by comparable wireless devices. Additionally, the panel shall allow wired devices to be identified with unique type codes which allow the system to display wireless trouble indications such as low battery, jamming, and tamper.

4.4.1 Wireless Reliability

Wireless communication for the wireless system shall incorporate an advanced mesh technology which incorporates UL 864 Class A approved supervised, redundant communication. All devices in the mesh network shall be capable of acting as repeaters for other devices in the same network. The wireless system shall also have a suite of tools that can be installed on a portable PC and used to assist in qualifying the site, installing the system, and verifying the proper operation of the system.

4.4.2 Wireless Approvals

The wireless system shall be approved or listed by the following agencies, as appropriate for each device:

UL
FM
CSFM
FCC

4.4.3 Addressable Wireless Devices

The system shall be capable of supporting addressable wireless detectors, monitor modules, and relay modules with similar appearance and capabilities as wired addressable devices.

Wireless devices shall utilize a gateway device to communicate with the fire alarm control panel, so that the wireless devices report to the panel using the established SLC protocol.

Wireless devices shall be capable of co-existing on the same panel with wired devices, and shall be capable of participating in software zone programming.

Device addressing for wireless device shall be consistent with wired devices, and shall use decade, decimal address switches.

Wireless devices (except the gateway) shall operate on batteries recommended by the manufacturer, and shall be UL tested and listed for 2 years of operation on one set of batteries.

The gateway shall be connected to the panel SLC loop and shall be capable of being powered by the SLC loop as well. Alternately, the gateway shall be capable of connection to the SLC loop only for communication with the FACP, and power may be supplied via a separate 24VDC input.

Wireless devices shall be connected to a compatible fire alarm system, and shall be supported by the system as wireless devices. Trouble conditions that are unique to wireless devices shall be reported to the FACP built-in annunciator and all connected remote annunciators.

Wireless devices shall use a UL approved Class A mesh communication protocol to provide redundant supervised wireless communication links.

A wireless mesh shall be comprised of one gateway and from one to forty-eight wireless devices.

Multiple wireless gateway systems may be connected to a single FACP.

The system shall allow for up to four wireless gateway systems in the same radio space.

Device status indicators (LEDs) on wireless devices shall not be required to match indications of wired devices, in particular for active indications where a steady on LED would reduce the battery life of the device.

Wireless detectors shall have dedicated bases with a magnetic tamper mechanism that initiates a trouble when the device is removed from the base. The tamper trouble condition shall latch at the panel until the detector is restored to the normal installed position and the trouble has been reset.

Wireless monitor modules shall have a dedicated cover that requires unfastening two screws to remove. The cover shall have a built-in magnet, and removal of the cover shall

initiate a trouble condition at the panel. The tamper trouble condition shall latch at the panel until the monitor module is restored to the normal installed position and the trouble has been reset.

Wireless monitor modules shall be capable of being mounted in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box. The optional surface mount Lexan enclosure shall be used for this purpose, except where installation of the wireless monitor module in a metal box has been tested and adequate performance for the application using the metal box has been confirmed.

Available Wireless devices shall include:

- WSD-P Wireless Photoelectric Smoke Detector
- WSD-ACCLIMATE Wireless Multi-Criteria Photoelectric Smoke Detector
- WSD-RH Wireless Heat Rate of Rise Detector
- WSD-H Wireless Fixed Heat Detector
- WAM-MM Wireless Monitor Module
- WAM-RC Wireless Relay Module
- VW-GATE Wireless Gateway Module
- B210W 6” Wireless Base

Unprogrammed wireless devices shall be capable of being used to perform a site survey to assist in determining the viability of a site for a wireless application. Tests shall include point to point connectivity, and a background RF Scan.

A program that supports qualification of potential wireless applications, configuration and installation, and diagnostics shall be available. This program shall be installed on a Windows® PC, and shall be capable of communicating with wireless devices by use of a USB adapter that plugs into the computer.

SECTION FIVE: WIRING

5.1 Installer’s Responsibilities

The installer shall coordinate the installation of the fire alarm equipment.

All conductors and wiring shall be installed according to the manufacturer’s recommendations.
It shall be the installer’s responsibility to coordinate with the supplier, regarding the correct wiring procedures before installing any conduits or conductors.

5.2 Installation of System Components

System components shall be installed in accordance with the latest revisions of the appropriate NFPA pamphlets, the requirements contained herein, National Electrical Code, local and state regulations, the requirements of the fire department and other applicable authorities having jurisdiction (AHJ).

All wire used on the fire alarm system shall be U.L. Listed as fire alarm protection signaling circuit cable per National Electrical Code, Articles 760.

SECTION SIX: WARRANTY AND FINAL TEST

6.1 General

The contractor shall warrant all equipment and wiring free from inherent mechanical and electrical defects for one year months from the date of final acceptance.

6.2 Final Test

Before the installation shall be considered completed and acceptable by the awarding authority, a test of the system shall be performed as follows:
The contractor's job foreman, a representative of the owner, and the fire department shall operate every building fire alarm device to ensure proper operation and correct annunciation at the control panel.

At least one half of all tests shall be performed on battery standby power.

Where application of heat would destroy any detector, it may be manually activated.

The communication loops and the indicating appliance circuits shall be opened in at least two (2) locations per circuit to check for the presence of correct supervision circuitry.

When the testing has been completed to the satisfaction of both the contractor's job foreman and owner, a notarized letter cosigned by each attesting to the satisfactory completion of said testing shall be forwarded to the owner and the fire department.

The contractor shall leave the fire alarm system in proper working order, and, without additional expense to the owner, shall replace any defective materials or equipment provided by him under this contract within one year (365 days) from the date of final acceptance by the awarding authority.

Prior to final test the fire department must be notified in accordance with local requirements.

6.3 As Built Drawings, Testing, and Maintenance Instructions

6.3.1 As Built Drawings

A complete set of reproducible "as-built" drawings showing installed wiring, color coding, and wire tag notations for exact locations of all installed equipment, specific interconnections between all equipment, and internal wiring of the equipment shall be delivered to the owner upon completion of system.

6.3.2 Operating and Instruction Manuals

Operating and instruction manuals shall be submitted prior to testing of the system. Three (3) complete sets of operating and instruction manuals shall be delivered to the owner upon completion. User operating instructions shall be provided prominently displayed on a separate sheet located next to the control unit in accordance with U.L. Standard 864.